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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.
09/139,386	08/25/98	MONFORTE	J GETR.031-STA

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EXAMINER

TUNG, J

ART UNIT**PAPER NUMBER**

1656

20

DATE MAILED:

07/31/01

Please find below and/or attached an Office communication concerning this application or proceeding.

Commissioner of Patents and Trad marks

Office Action Summary

Application No.

09/139,386

Applicant(s)

Monforte et al.

Examiner

Joyce Tung

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136 (a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 5/18/01.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11; 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-86 is/are pending in the application.
- 4a) Of the above, claim(s) 22-86 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-21 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☒ Claims 1-86 are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are objected to by the Examiner.
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. § 119

- 13) ☐ Acknowledgement is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d).
- a) ☐ All b) ☐ Some* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- *See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. § 119(e).

Attachment(s)

- 15) ☐ Notice of References Cited (PTO-892)
- 16) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 17) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 18
- 18) ☐ Interview Summary (PTO-413) Paper No(s) _____
- 19) ☐ Notice of Informal Patent Application (PTO-152)
- 20) ☐ Other: _____

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DETAILED ACTION

Request for Continued Examination

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 5/18/2001 has been entered.

Claim Rejections - 35 U.S.C. § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was

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made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(f) or (g) prior art under 35 U.S.C. 103(a).

3. Claims 1-21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Koster (5,547,835) in view of Richards et al. (5,427,929).

Koster et al. disclose a nucleic acid sequence method using mass spectrometry in which polymerase chain reaction is used to form the four base specific sets of DNA fragments (see column 1, lines 61-65). The primer at 5' end has a linker including a spacer with sufficient length attaching to a solid support (see column 11, lines 51-56). The immobilized products on the solid support can be washed to remove the unbound things (see column 11, lines 59-60). The linker is cleaved and the fragments are subjected to a mass spectrometry (see column 12, lines 1-10). The solid support bound base sequence can be modified by thio-modification (see column 12, lines 58-60). The linker chemistry can be a biotin/streptavidin system (see column 13, lines 15-31). MALDI mass spectrometry with a time-of-flight mass analyzer is used for DNA sequencing (see column 14, lines 47-67). Various solid supports can be used, for example, glass fiber filter. (see column 14, lines 5-18). The four dideoxy nucleotides are used for the base termination of the primer extension reaction (see column 10, lines 13-25). Example 17 (see column 31) teaches the incorporation of alpha-thiotriphosphate to generate primer extension products containing phosphorothioate linkages followed by treatment with 2-iodoethanol for cleavage (See column 32, lines 1-14). Koster et al. also disclose that in another approach, the nested Sanger

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DNA/RNA fragments are capture via Watson-Crick base pairing to a solid support bound oligonucleotide complementary to either the sequence of the nucleic acid primer or the tag oligonucleotide sequence (See column 12, lines 51-56) (as recited in claim 21). The linkage will be cleaved and the nested Sanger DNA/RNA fragment desorbed and subsequently ionized at the radical position formed, and the cleavage can be homolytically cleave and laser cleave (See column 12, lines 42-50)

Koster et al. do not disclose using a primer with a 3' end chemically cleavable site and is capable of being extended by an enzyme. However, Koster et al. do disclose cleaving the immobilized amplified products via the chemical cleavage of an incorporated alpha-thiotriphosphate (See column 13, example 17). Incorporating modified base into an amplified nucleic acid products via polymerase chain reaction with a modified primer was well known in the art at the time of the instant invention (See Richards et al. 5,427,929, column 7, lines 29-33 and column 9, lines 55-68 and column 10, line 1).

Koster et al. do not disclose the ligase enzyme involved.

Richards et al. disclose a method which involves a ligase chain reaction (See column 11, lines 2-9) and a primer comprising 3' end cleavable site (See column 16, lines 65-68 to column 17, 1-5)

The teachings of Koster et al. and Richards et al. suggest the limitations of the instant claims 1-21. The instant claims 1-21 are drawn to a primer comprising a 5' end containing an immobilization site and 3' end containing a chemically cleavable site and capable of being

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extended by an enzyme. The chemical cleavage site comprises a modified base and modified sugar and is selected from 3'-(S)-phosphorathioate. The immobilized site comprises a solid support bound to an intervening arm which has six or more atoms in length and the solid support is as claimed in claim 14. The functional group is avidin and streptavidin.

One of ordinary skill in the art at the time of the instant invention would have been motivated to combine the references of Koster et al. and Richards et al. to make the primer as claimed because the primer of Koster et al. used has a cleavable site with disulfide bond modification to increase mass spectrometric performance (See column 13, lines 3-35), but the modification is not on the 3' end of the primer and based upon the teachings of Richards et al. a chemical cleavage site will be incorporated into an amplified products by a modified primer at 3' end and the method of Richards et al. is efficient and economy for reducing carryover contamination in an amplification procedure (See the Abstract). It would have prima facie obvious to make the primer as claimed.

4. All claims are drawn to the same invention claimed in the application prior to the entry of the submission under 37 CFR 1.114 and could have been finally rejected on the grounds and art of record in the next Office action if they had been entered in the application prior to entry under 37 CFR 1.114. Accordingly, THIS ACTION IS MADE FINAL even though it is a first action after the filing of a request for continued examination and the submission under 37 CFR 1.114. See MPEP § 706.07(b). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

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A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

5. Any inquiries concerning this communication or earlier communications from the examiner should be directed to Joyce Tung whose telephone number is (703) 305-7112. The examiner can normally be reached on Monday-Friday from 8:00 AM-4:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Gary Jones can be reached at (703) 308-1152.

Any inquiries of a general nature or relating to the status of this application should be directed to the Chemical/Matrix receptionist whose telephone number is (703) 308-0196.

6. Papers related to this application may be submitted to Group 1600 by facsimile transmission. Papers should be faxed to Art Unit 1656 via the PTO Fax Center located in Crystal

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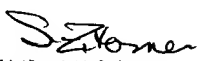
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Mall 1 using (703) 305-3014 or 308-4242. The faxing of such papers must conform with the notice published in the Official Gazette, 1096 OG 30 (November 15, 1989).

Joyce Tung

July 27, 2001


STEPHANIE W. LINDER
PRIMARY EXAMINER